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VoIP Ceiling Speaker Operations Guide

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Part #*010844*

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PoE VoIP Speaker Operations Guide 930095D
Part # 010844

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Revision History

Revision	Date Released	Description of Changes
D	10-30-2006	Updates screen captures of the Speaker Setup web pages.
		Adds notes that tell the customer to make sure that the PC is on the same IP network as the speaker prior to speaker configuration.
		Adds Tables that describe each of the configurable parameters and buttons on the IP Speaker Setup web pages.
		Adds steps that tell the customer to “Save Settings” after completing configuration settings.
		Adds Revision History table.
		Moves the “Mounting the Speaker section to Chapter 3.

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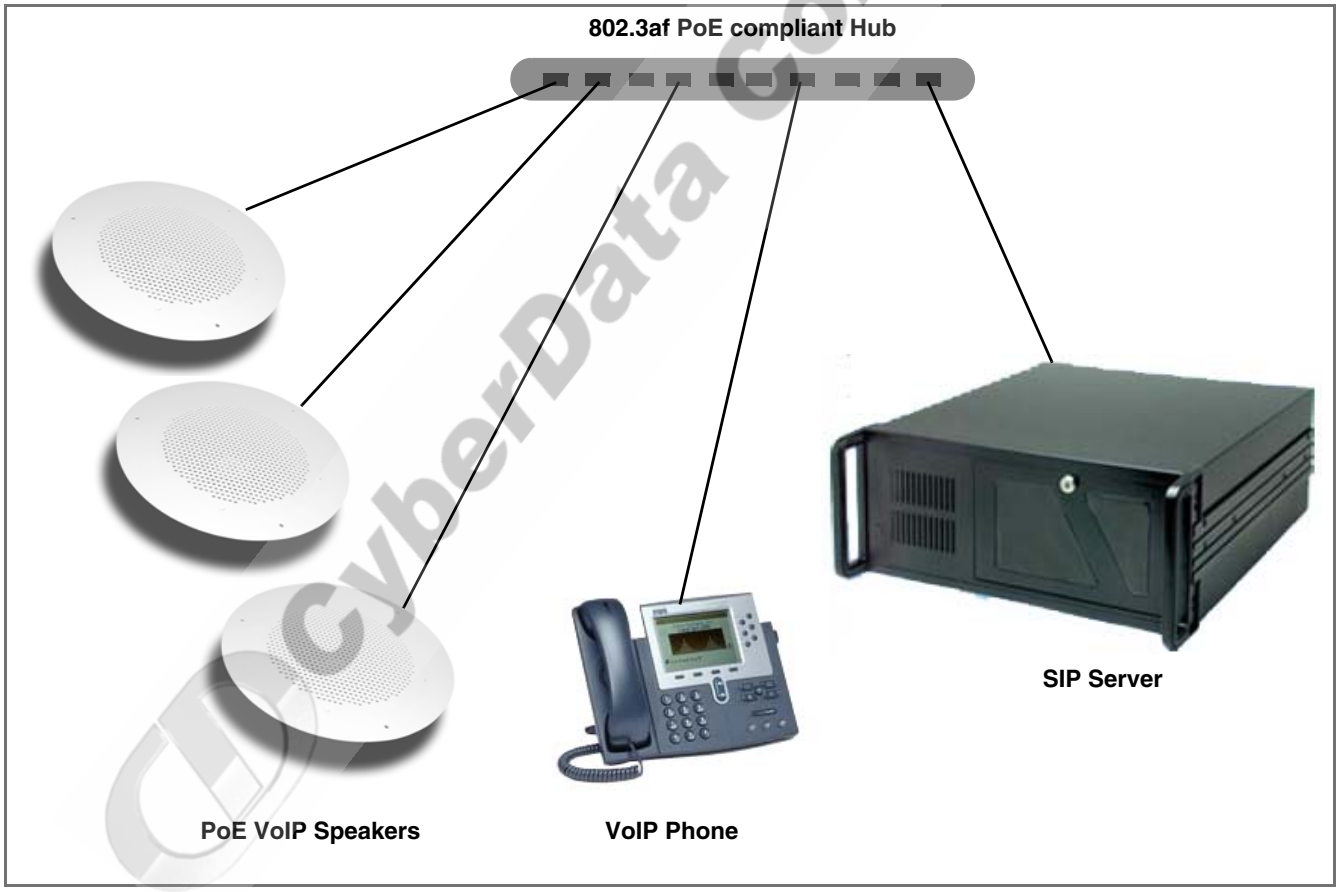
1 Product Overview

The Voice-over-IP (VoIP) Ceiling Speaker uses a single cable to connect to existing LANs, and Session Initiation Protocol (SIP) to broadcast messages over your public address system. The small footprint and low height makes this an ideal speaker to discreetly mount almost anywhere.

1.1 Typical System Installation

Figure 1 illustrates how the VoIP Ceiling Speakers are normally installed as part of a public address system.

Figure 1. Public Address System



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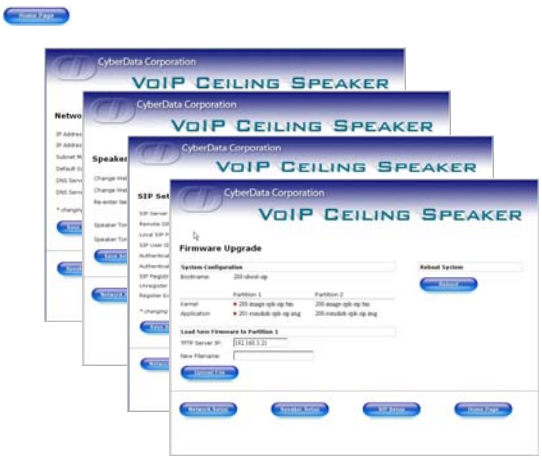
1.2 Product Features



- *SIP compliant*
- *Dual speeds of 10 Mbps and 100 Mbps*
- *802.3af compliant*
- *High efficiency speaker driver*
- *Web-based configuration*
- *External volume control*
- *Small footprint*
- *Web-based firmware upgrades*

1.3 Supported Protocols

The IP Speaker supports:

- SIP
- HTTP Web-based configuration

  Provides an intuitive user interface for easy system configuration and verification of speaker operations.
- DHCP Client

  Dynamically assigns IP addresses in addition to the option to use static addressing.
- TFTP Client

  Facilitates Web-based firmware upgrades of the latest speaker capabilities.
- RTP
- RTP/AVP - Audio Video Profile
- Audio Encodings

  PCMU (G.711 mu-law)

  PCMA (G.711 A-law)

  Packet Time 20 ms

1.4 Supported SIP Servers

The following link contains information on how to configure the speaker for the supported SIP servers:

http://www.CyberData.net/support/voip

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1.5 Product Specifications

Category	Specification
Sensitivity	96dB/1W/1M S.P. Level
Output	8 Watts Peak Power
Port Baud Rate	10/100 Mbps
Power Requirement	802.3af compliant
Protocol	SIP
Part Number	010844
Dimensions	9" x 2.4"
Weight	1.6 lbs./shipping weight of 2.5 lbs.

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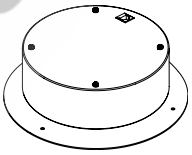
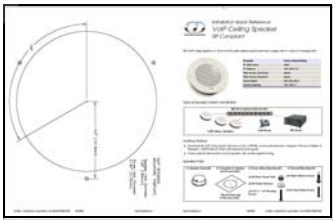
2 Installing the VoIP Ceiling Speaker

2.1 Parts List

Table 2-1 illustrates the parts for each speaker and includes kits for the drop ceiling and drywall mounting.

Note The *Template for Speaker and Screw Holes* is located on the last page of the *Installation Quick Reference* that is included in the packaging with each speaker.

Table 2-1. Parts List

Quantity	Part Name	Illustration
1	Speaker Assembly	
1	Installation Quick Reference Guide	
1	Speaker Mounting Accessory Kit (Part #070054A)	

2.2 Speaker Setup

Set up and configure each speaker *before* you mount it.

CyberData delivers each speaker with the following factory set default values:

Table 2-2. Factory Default Settings

Parameter	Factory Default Setting
IP Addressing	static
IP Address	192.168.3.10
Web Access Username	admin
Web Access Password	admin

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Table 2-2. Factory Default Settings (continued)

Parameter	Factory Default Setting
Subnet Mask	255.255.255.0
Default Gateway	192.168.3.1

2.2.1 Connect Power to the Speaker

Figure 2-1 and Figure 2-2 illustrates how to connect the VoIP Ceiling Speaker to a 802.3af compliant ethernet hub (Figure 2-1) or a PoE Injector (Figure 2-2) via a Cat 5 Ethernet Connector.

Note If a 802.3af compliant ethernet hub is not available, you will need a PoE Injector, part #010867A (ordered separately). A PoE Injector is a power supply solution for those who have a standard hub.

Figure 2-1. 802.3af Compliant Ethernet Hub

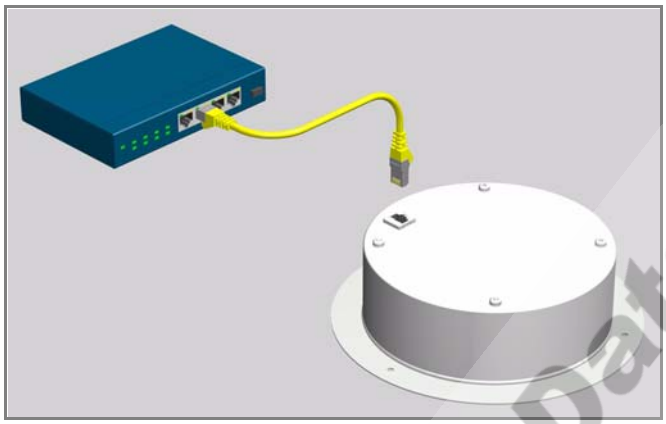
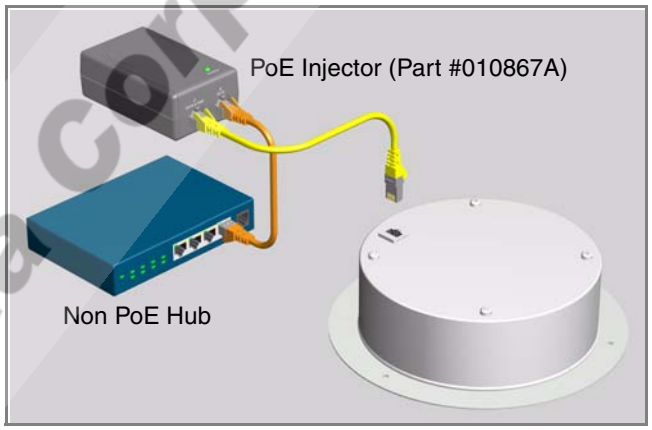


Figure 2-2. PoE Injector



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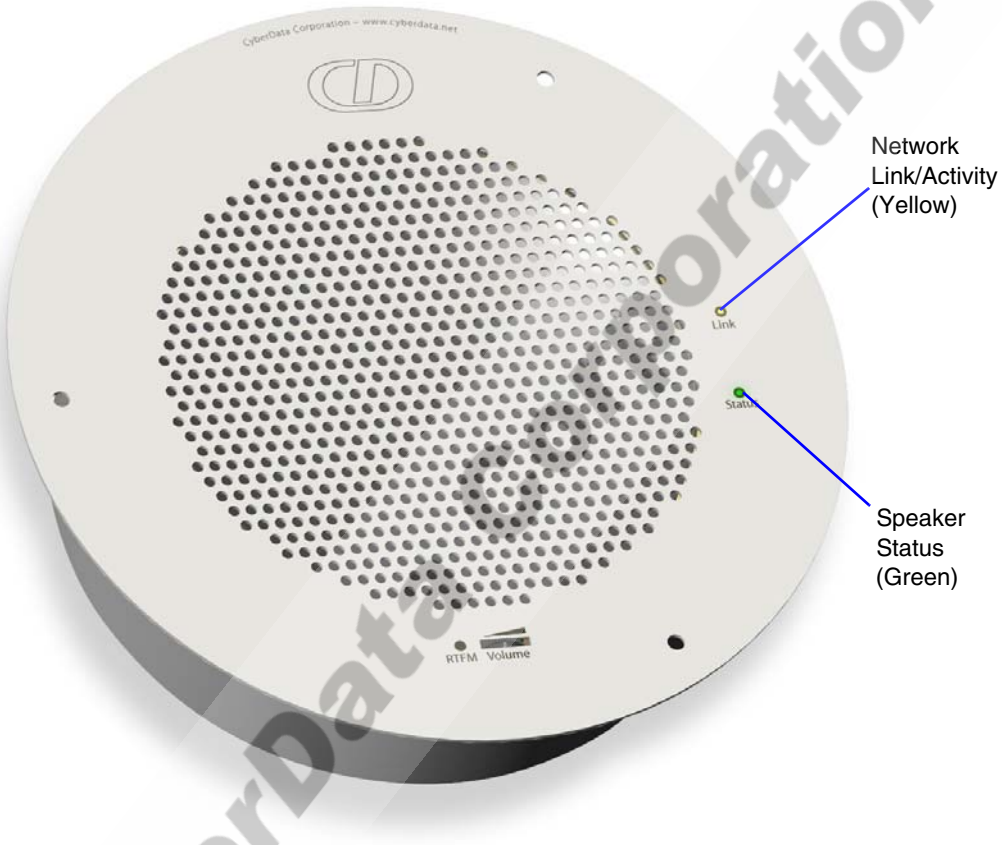
2.2.2 Confirm that the Speaker is Operational and Linked to the Network

After connecting the speaker to the 802.3af compliant ethernet hub, the LEDs on the speaker face confirm that the speaker is operational and linked to the network.

Figure 2-3. Status and Activity LEDs



2.2.2.1 Status LED

After supplying power to the speaker:

1. The green **Status** LED illuminates after approximately five seconds to indicate the start of the firmware verification and load process.
2. After approximately 15 seconds, the **Status** LED begins to blink at one second intervals to indicate the start of the firmware boot process.
3. After approximately 35 seconds, the speaker beeps once to indicate that it is operational.
4. The **Status** LED will continue to blink at one second intervals to indicate normal operation.

2.2.2.2 Link LED

- The **Link** LED is illuminated when the network link to the speaker is established.
- The **Link** LED blinks to indicate network traffic.

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2.2.3 Confirm the IP Address, Test the Audio, and Check the Volume

When the speaker is operational and linked to the network, use the Reset Test Function Management **(RTFM)** switch (Figure 2-4) on the speaker face to announce and confirm the speaker's IP Address, test that the audio is working, and check the volume.

Figure 2-4. RTFM Switch

To announce a speaker's current IP address:

1. Press and hold the **RTFM** switch until it beeps (after one second).
2. Release the switch to hear the IP address announcement, and check the speaker volume.

Note The speaker will announce it's default IP address (192.168.3.10).

CAUTION Pressing and holding the RTFM switch for longer than 20 seconds will restore the speaker to the factory default settings. See Section 2.5, "Restore the Factory Default Settings".

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2.2.4 Adjust the Volume

To adjust the speaker volume, turn the **Volume** dial (Figure 2-5) on the speaker face.

Figure 2-5. Volume Control

2.3 Configure the Speaker Parameters

To configure the speaker online, use a standard web browser.

Configure each speaker and verify its operation *before* you mount it. When you are ready to mount a speaker, refer to Chapter 3, "Mounting the Speaker" for instructions.

All speakers are initially configured with the following default IP settings:

When configuring more than one speaker, attach the speakers to the network and configure one at a time to avoid IP address conflicts.

Table 2-3. Factory Default Settings

Parameter	Factory Default Setting
IP Addressing	static
IP Address	192.168.3.10
Web Access Username	admin

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Table 2-3. Factory Default Settings (continued)

Parameter	Factory Default Setting
Web Access Password	admin
Subnet Mask	255.255.255.0
Default Gateway	192.168.3.1

2.3.1 Log in to the Configuration Home Page

1. Open your browser to the speaker IP address.

   For the initial configuration of the speaker, open your browser to the default IP address:

   http://192.168.3.10

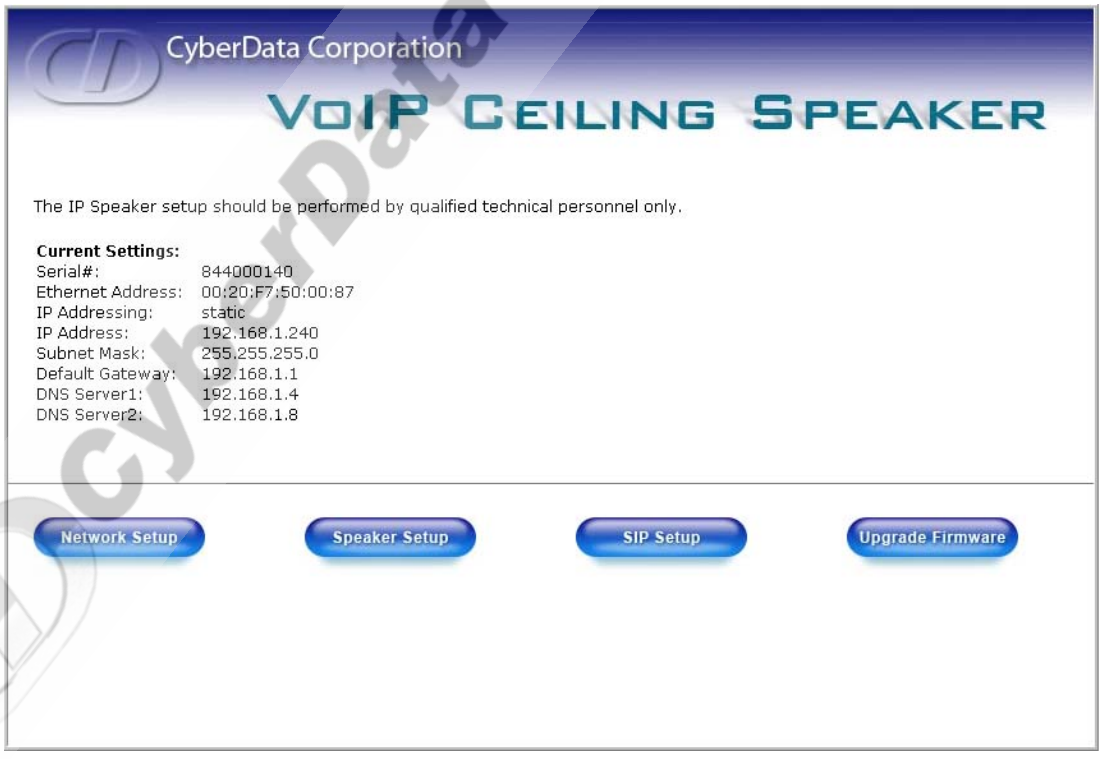
Note Make sure that the PC is on the same IP network as the speaker.

2. When prompted, use the following default **Web Access Username** and **Web Access Password** to access the **Home Page** (Figure 2-6):

   Web Access Username: **admin**

   Web Access Password: **admin**

Figure 2-6. Home Page



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3. On the **Home Page**, review the setup details and navigation buttons described in Table 2-4.

Table 2-4. Home Page Overview

Web Page Item	Description
Serial #	Device serial number.
Ethernet Address	Device ethernet address.
IP Addressing	Shows the current IP addressing setting (**DHCP** or **static**).
IP Address	Shows the current IP address.
Subnet Mask	Shows the current subnet mask address.
Default Gateway	Shows the current default gateway address.
	Link to the **Speaker Setup** web page.
	Link to the **Network Setup** web page.
	Link to the **SIP Setup** web page.
	Link to the **Upgrade Firmware** web page.

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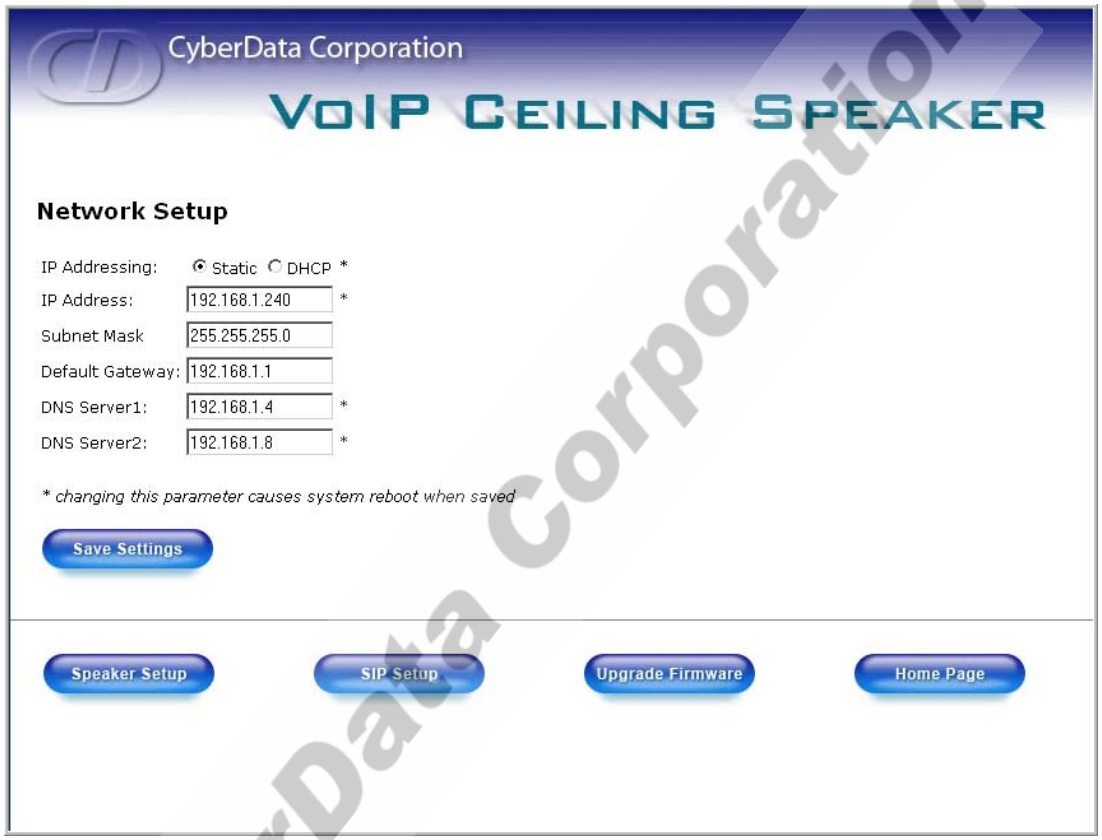
2.3.2 Configure the Network Parameters

1. Click the **Network Setup** button to open the **Network Setup** page (Figure 2-7).

Figure 2-7. Network Setup Page



2. On the **Network Setup** page, enter values for the parameters indicated in Table 2-5.

Table 2-5. Network Setup Parameters

Web Page Item	Description
IP Addressing*	Select either **DHCP IP Addressing** or **Static IP Addressing** by marking the appropriate radio button. If you select **Static**, configure the remaining parameters indicated in Table 2-5. If you select **DHCP**, go to Step 3.
IP Address*	Enter the Static IP address.
Subnet Mask	Enter the Subnet Mask address.
Default Gateway	Enter the Default Gateway address.
DNS Server 1*	Enter the DNS Server 1 address.
DNS Server 2*	Enter the DNS Server 2 address.
Save Settings	Click on this button to save your configuration settings. Changing a parameter that has an asterisk next to it will cause a system reboot when saved.

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Table 2-5. Network Setup Parameters (continued)

Web Page Item	Description
	Link to the **Speaker Setup** page.
	Link to the **SIP Setup** page.
	Link to the **Upgrade Firmware** page.
	Link to the **Home** page.

3. After changing the parameters, click **Save Settings**. This updates the changed parameters and reboots the speaker if appropriate.
4. Connect the speaker to the target network.
5. From a system on the same network as the speaker, open a browser with the new IP address of the speaker.

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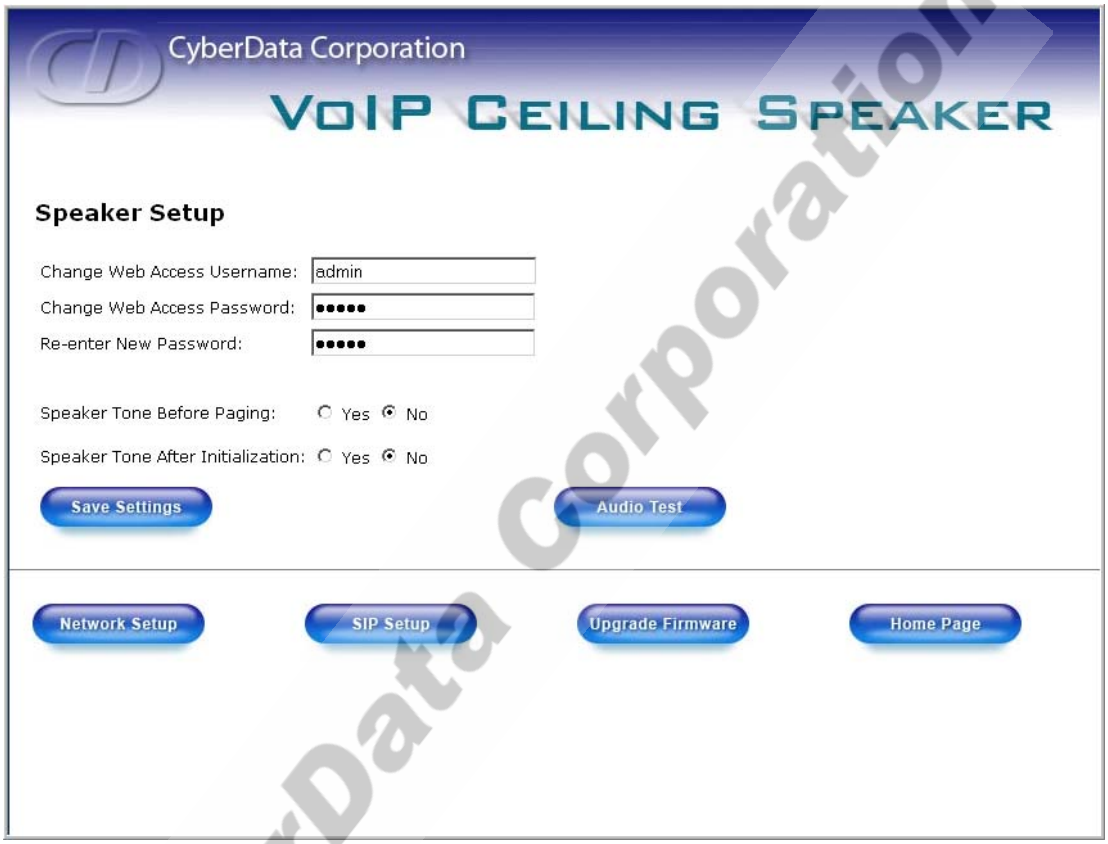
2.3.3 Set up the Speaker

1. Click on the **Speaker Setup** button to open the **Speaker Setup** page. See Figure 2-8.

Figure 2-8. Speaker Setup



2. On the **Speaker Setup** page, enter values for the parameters indicated in Table 2-6.

Table 2-6. Speaker Setup Parameters

Web Page Item	Description
Change Web Access Username	Use this field to change the Web Access Username
Change Web Access Password	Use this field to change the Web Access Password
Re-enter New Password	Use this field to re-enter a new password
Speaker Tone Before Paging	Enable/Disable the speaker tone (beep) before each page.
Speaker Tone After Initialization	Enable/Disable the speaker tone (beep) after the system startup.
Save Settings	Click on this button to save your configuration settings.
Audio Test	Click on this button to do an audio test. Generates a voice message for testing the speaker audio quality and volume.

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Table 2-6. Speaker Setup Parameters (continued)

Web Page Item	Description
Network Setup	Link to the **Network Setup** page.
SIP Setup	Link to the **SIP Setup** page.
Upgrade Firmware	Link to the **Upgrade Firmware** page.
Home Page	Link to the **Home** page.

3. After changing the parameters, click **Save Settings**.

2.3.4 Configure the SIP Parameters

1. Click **SIP Setup** to open the **SIP Setup** page (Figure 2-9).

Note For specific server configurations, go to the following URL: http://www.CyberData.net/support/voip

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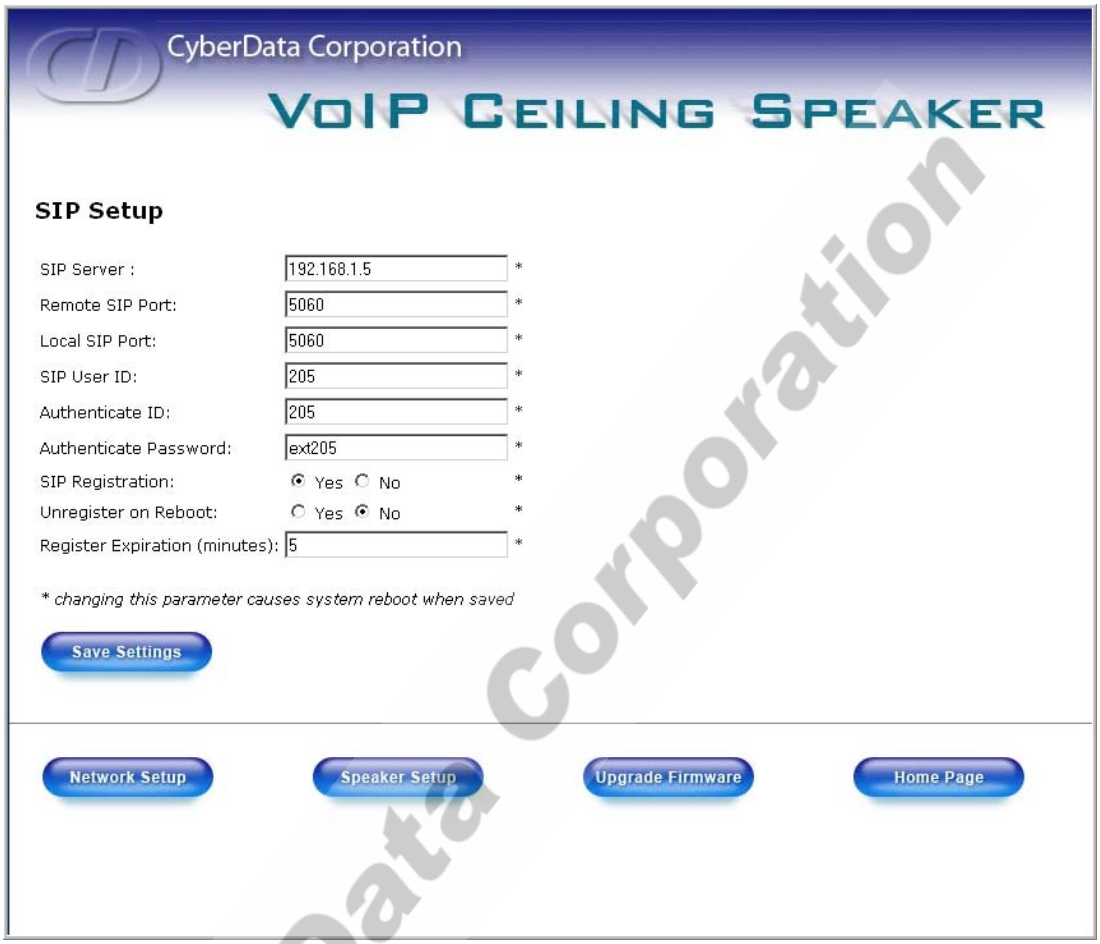
Figure 2-9. SIP Setup Page



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2. On the **SIP Setup** page, enter values for the parameters indicated in Table 2-7.

Table 2-7. SIP Setup Parameters

Web Page Item	Description
SIP Server*	Enter the SIP server represented as either a numeric IP address in dotted decimal notation or the fully qualified host name (FQHN) up to 64 characters.
Remote SIP Port*	Enter the **Remote SIP Port** number (default is 5060).
Local SIP Port*	Enter the **Local SIP Port** number (default is 5060).
SIP User ID*	Enter the **SIP User ID** (up to 30 alphanumeric characters).
Authenticate ID*	Enter the **Authenticate ID** (up to 30 alphanumeric characters).
Authenticate Password*	Enter the **Authenticate Password** (up to 30 alphanumeric characters).
SIP Registration*	Enable/Disable SIP Registration.
Unregister on Reboot*	• Select **Yes** to automatically unregister the speaker when it is rebooted. • Select **No** to keep the speaker registered when it is rebooted.
Register Expiration*	Enter the SIP Registration lease time in minutes (default is 60 minutes).
Save Settings	Click on this button to save your configuration settings. Changing a parameter that has an asterisk next to it will cause a system reboot when saved.
Speaker Setup	Link to the **Speaker Setup** page.
Network Setup	Link to the **Network Setup** page.
Upgrade Firmware	Link to the **Upgrade Firmware** page.
Home Page	Link to the **Home** page.

3. After changing the parameters, click **Save Settings**.

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2.4 Upgrade the Firmware and Reboot the Speaker

To upload the speaker firmware from your PC:

1. Set up a TFTP server.

   If you do not already have a TFTP server running on your network, see Chapter 4, "Setting up a TFTP Server".

2. Retrieve the latest speaker firmware from the CyberData website: www.CyberData.net/support/voip

3. Unzip the speaker version file. This file may contain the following:
   - Kernel firmware file: xxx-image-xxx-xxx.bin
   - Application firmware file: xxx-romdisk-xxx-xxx.img
   - Release notes

4. Copy the firmware files to be upgraded to the appropriate TFTP server directory:
   - c:\tftp-root\for Windows
   - /tftpboot/for Linux

5. Log in to the speaker home page as instructed in Section 2.3.1, "Log in to the Configuration Home Page".

6. Click the **Upgrade Firmware** button to open the **Firmware Upgrade** page. See Figure 2-10.

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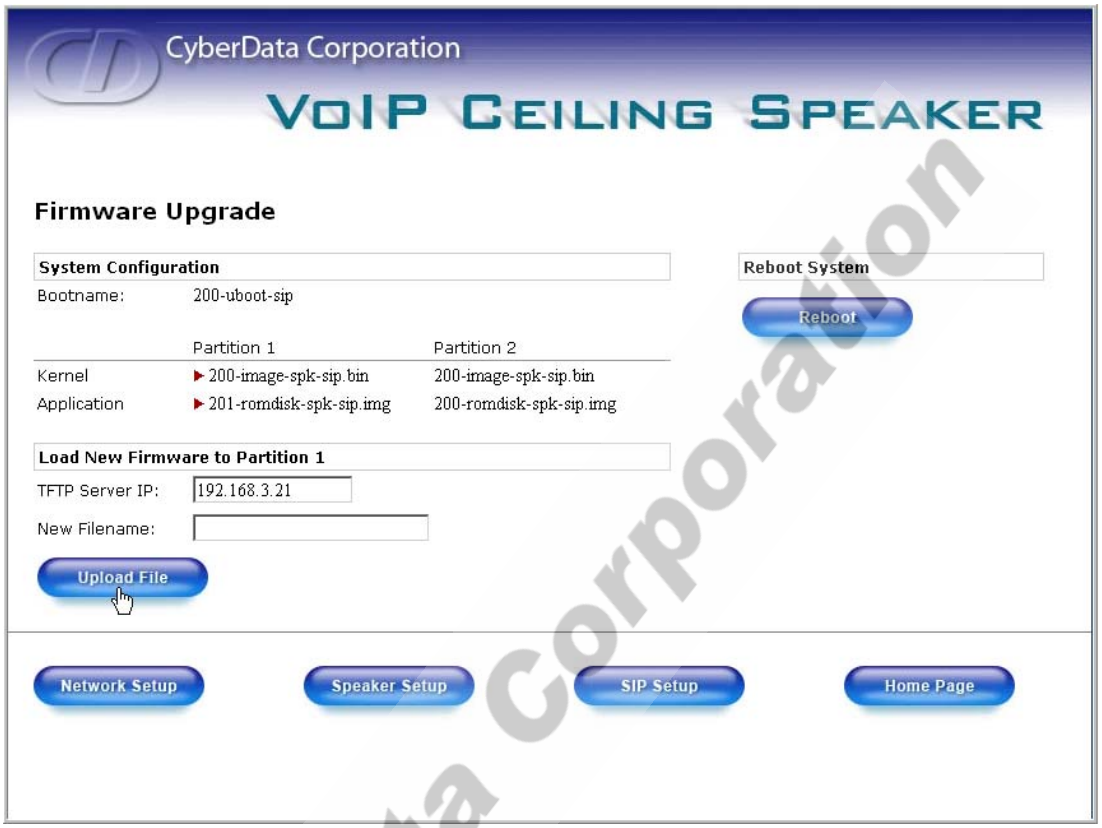
Figure 2-10. Firmware Upgrade Page



7. Enter the IP address of your TFTP server into the **TFTP Server IP** parameter field.
8. Enter the firmware filename of the file to be uploaded into the **New Filename** parameter field.

   For example, kernel filename "201-image-spk-sip.bin".
9. Click **Upload File**.

Note This starts the upload process. Once the speaker has uploaded the file, the **Uploading Firmware** countdown page appears, indicating that the firmware is being written to flash. The speaker will automatically reboot when the upload is complete. When the countdown finishes, the **Firmware Upgrade** page will refresh. The uploaded firmware filename should be displayed in the system configuration (indicating successful upload and reboot).

10. Repeat steps 8 and 9 if you are uploading the **Kernel** and **Application** files.

    For example, **Application** filename "201-romdisk-spk-sip.img".

    Table 2-8 shows the web page items on the **Firmware Upgrade** page.

Table 2-8. Firmware Upgrade Parameters

Web Page Item	Description
System Configuration	Shows the current configuration.
Bootname	Shows the current boot loader filename.
Kernel	Shows the current kernel filename for partition 1 and 2.
Application	Shows the current application filename for partition 1 and 2.

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Table 2-8. Firmware Upgrade Parameters (continued)

Web Page Item	Description
TFTP Server IP address	Enter the TFTP Server IP address.
New Filename	Use this field to enter the new file name for the kernel or application firmware file that you are uploading.
Upload File	Click on this button to automatically upload the selected firmware and reboot the system.
Speaker Setup	Link to the **Speaker Setup** page.
Network Setup	Link to the **Network Setup** page.
SIP Setup	Link to go to the **SIP Setup** page.
Home Page	Link to the **Home** page.
Reboot	Click on this button to reboot the system.

2.4.1 Reboot the Speaker

To reboot a speaker, log in to the web page as instructed in Section 2.3.1, "Log in to the Configuration Home Page".

1. Click **Upgrade Firmware** to open the **Firmware Upgrade** page (Figure 2-11).

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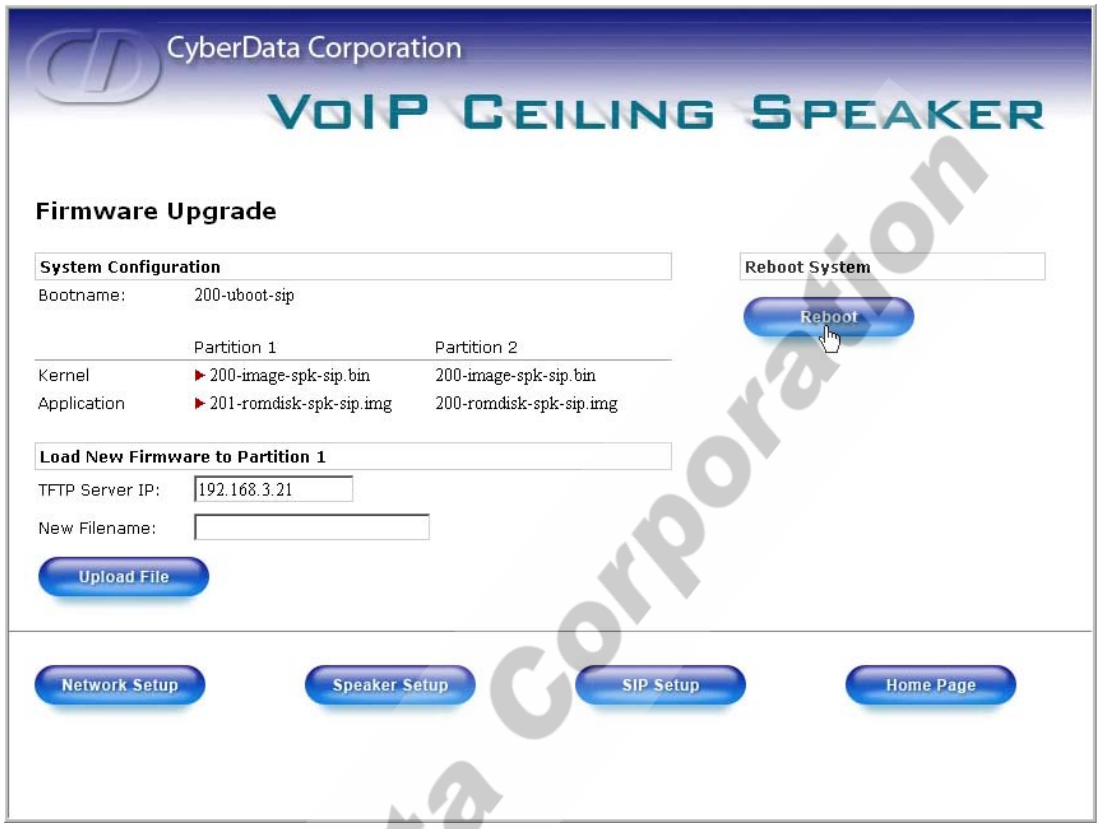
Figure 2-11. Reboot System Section



2. Click **Reboot**. A normal restart will occur as per Section 2.2.2.1, "Status LED".

2.5 Restore the Factory Default Settings

When troubleshooting configuration problems, it is sometimes convenient to restore the device to a known state.

Each speaker is delivered with factory set default values for the parameters indicated in Table 2-9. Use the **RTFM** switch on the speaker face to restore these parameters to the factory default settings.

Note When you use the RTFM switch, the factory default settings are restored for *only* the parameters indicated in Table 2-9. The other parameters in the current speaker configuration will remain unchanged.

Table 2-9. Factory Default Settings

Parameter	Factory Default Setting
IP Addressing	static
IP Address	192.168.3.10
Web Access Username	admin
Web Access Password	admin
Subnet Mask	255.255.255.0

Table 2-9. Factory Default Settings (continued)

Parameter	Factory Default Setting
Default Gateway	192.168.3.1

To restore these parameters to the factory default settings:

1. Press and hold the RTFM switch for 20 seconds.
2. The speaker will beep after one second. Continue to hold the switch until the speaker beeps again after 20 seconds.
3. Release the switch. The following occurs:
   - A voice message announces that the factory default settings are being restored.
   - Once the settings are restored, a voice message announces the restored default IP address:

     192.168.3.10

   - A voice message announces that the speaker is rebooting.
   - The speaker reboots.

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3 Mounting the Speaker

3.0 Mount the Speaker

Before you mount the speaker, make sure that you have received all the parts for each speaker. Refer to Table 3-1 and Table 3-2.

Table 3-1. Drop Ceiling Mounting Components (Part of the Accessory Kit)

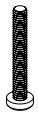
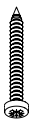
Quantity	Part Name	Illustration
3	#8 Nylon Thumb Nuts	
3	#8 Fender Washers	
3	8-32 x 1 1/4" Mounting Screws	

Table 3-2. Drywall Mounting Components (Part of the Accessory Kit)

Quantity	Part Name	Illustration
3	Plastic Ribbed Anchors	
3	#6 Sheet Metal Screws	

To mount the speaker:

1. Use the **TEMPLATE** to cut the speaker hole and prepare holes for the screws (Figure 3-1). This template is located on the back page of the *Installation Quick Reference* that is delivered with each speaker.

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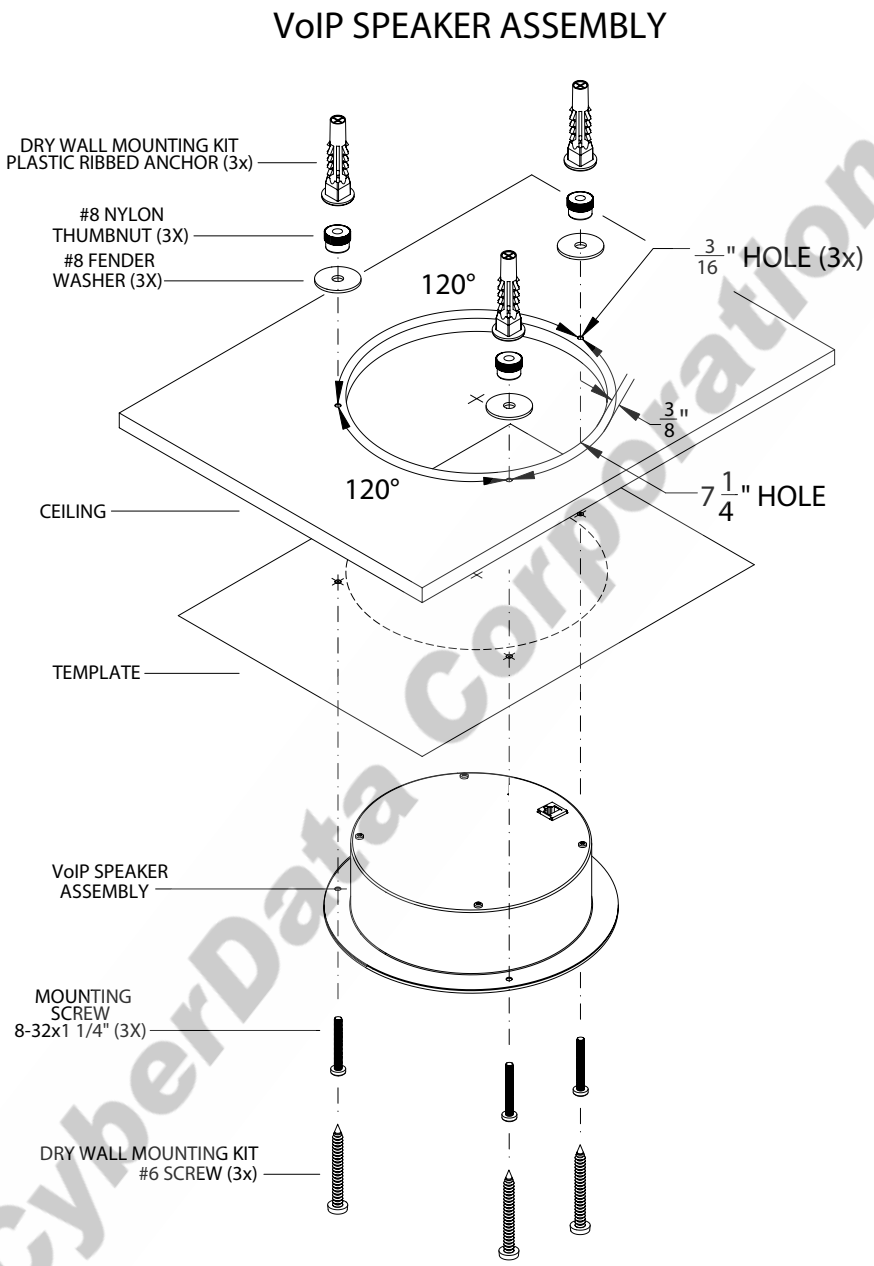
Figure 3-1. VoIP Speaker Assembly



2. Plug the Ethernet cable into the Speaker Assembly. Section 2.2.2, "Confirm that the Speaker is Operational and Linked to the Network" explains how the **Link** and **Status** LEDs work.

3. At this point:

   - For *drop ceiling mounting*, position the **VoIP SPEAKER ASSEMBLY** in the ceiling so that its screw holes align with those you prepared.
   - For *drywall mounting*, place the three **PLASTIC RIBBED ANCHORS** in the holes you prepared, and position the **VoIP SPEAKER ASSEMBLY** over them, aligning the screw holes in the assembly with the anchors.

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4. To fasten the speaker:
   - For *drop ceiling mounting*, use the three **8-32 x 1 1/4" MOUNTING SCREWS**, **#8 NYLON THUMB NUTS**, and **#8 FENDER WASHERS** to secure the speaker.
   - For *drywall mounting*, use the three **#8 SHEET METAL SCREWS** to secure the speaker.

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4 Setting up a TFTP Server

4.0 Set up a TFTP Server

Upgrading the VoIP Ceiling Speaker firmware requires a TFTP server on which you access the Web interface where you can upload the firmware files.

4.0.1 In a LINUX Environment

To set up a TFTP server on LINUX:

1. Create a directory dedicated to the TFTP server, and move the files to be uploaded to that directory.
2. Run the following command where `/tftpboot/` is the path to the directory you created in Step 1: the directory that contains the files to be uploaded. For example:

   `in.tftpd -l -s /tftpboot/your_directory_name`

4.0.2 In a Windows Environment

You can find several options online for setting up a Windows TFTP server. This example explains how to use the Solarwinds freeware TFTP server, which you can download at:

`http://www.tucows.com/preview/326445`

To set up a TFTP server on Windows:

1. Install and start the software.
2. Select **File/Configure/Security** tab/**Transmit Only**.
3. Make a note of the default directory name, and then move the firmware files to be uploaded to that directory.

4.0.3 In a Solarwinds Server Environment

You can find several options online for setting up a Solarwinds server. This example explains how to use the Solarwinds freeware TFTP server, which you can download at:

`http://www.CyberData.net/support/voip`

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5 Troubleshooting/Technical Support

5.1 Frequently Asked Questions (FAQ)

Go to the following URL to see CyberData's list of frequently asked questions:

http://www.CyberData.net/support/voip

5.2 Documentation

The documentation for this product is released in an English language version only. You can download PDF copies of CyberData product documentation at:

www.CyberData.net—>Support—>Drivers, Utilities & Manuals—>VoIP Products

5.3 Contact Information

Contact	CyberData Corporation 2555 Garden Road Monterey, CA 93940 USA www.CyberData.net Phone: 800-CYBERDATA (800-292-3732) Fax: 831-373-4193
Sales	Sales 831-373-2601 Extension 334
Technical Support	Phone: 831-373-2601 Extension 333 Email: support@CyberData.net
Returned Materials Authorization	To return the product, contact the CyberData Returned Materials Authorization (RMA) department at: Phone: 831-373-2601, Extension 136 Email: RMA@CyberData.net When returning a product to CyberData, an approved CyberData RMA number must be printed on the outside of the original shipping package. No product will be accepted for return without an approved RMA number. Send the product, in its original package, to the following address: CyberData Corporation 2555 Garden Road Monterey, CA 93940 Attention: RMA "your RMA number"

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5.4 Warranty

CyberData warrants its product against defects in material or workmanship for a period of two years from the date of purchase. Should the product fail within the warranty period, CyberData will repair or replace the product free of charge. This warranty includes all parts and labor.

If the product is out-of-warranty and fails, a flat rate repair charge of one half the product purchase price will be assessed. Repair costs for products that are in warranty, but damaged by improper modifications or abuse, will be charged at the out-of-warranty rate. Products returned to CyberData, both in and out-of-warranty, are shipped to CyberData at the expense of the customer. Charges for shipping repaired products back to the customer will be paid by CyberData.

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